

## **EPA Bradford County, Pennsylvania Retrospective HF Study**

### *Weston Solutions' Evaluation of Geology and Water Well Data*

Chesapeake (CHK) provided Weston Solutions, Inc. (Weston) access to all contractor collected and commercial laboratory analyzed split sample information obtained during the first, and only known, EPA Bradford County, PA retrospective study sampling event (Oct/Nov 2011), and requested that Weston provide an independent review and analysis. The charge to Weston, similar to that given to EPA by Congress, was simply to independently review publically available information and CHK provided data to determine if a relationship between hydraulic fracturing and sampled drinking water resources could be made. A total of 15 drinking water supply samples were included in Weston's evaluation. It should be noted that the remaining 22 EPA sample locations were excluded because CHK was not able to obtain access to the sites during the EPA sampling event, locations were held in confidence by the EPA, or the locations were not in proximity to CHK's operations.

Weston gathered the best available references and information to characterize local geology and aquifer characteristic; including sources from USGS, PA Geological Survey and Center for Rural Pennsylvania. In addition, CHK provided summary statistics for baseline water quality characteristic of domestic drinking water resources associated with the general EPA study area.

Weston's final draft report concludes that the drinking water resources evaluated showed no evidence of impact by oil and gas activity, and individual parameters fell within the ranges identified in publically available data prior to oil and gas activity in Bradford Co., PA. However, it should be noted that some split sample data, and historic information for that matter, exceed appropriate screening criteria – PA Act 2, EPA MCLs and SMCLs, and EPA Regional Screening Levels.

#### Talking Points:

- EPA is conducting a retrospective study in Bradford/Susquehanna Cos., PA, part of their national hydraulic fracturing study. During this portion of their study, EPA collected water samples from 37 drinking water resources (e.g., water wells and surface springs). Chesapeake's consultant was able to collect split aliquots from EPA's samples from 18 of those wells; 15 Bradford Co. and 3 Susquehanna Co.
- These samples were sent to NELAP accredited laboratory for analysis using recognized and approved analytical methods.
- An independent evaluation of the 15 Bradford Co. split sample data and historic regional groundwater data was performed by Weston Solutions.
- **Weston Solutions concluded that the 15 residential drinking water resources included in the analysis were not impacted by oil and gas activity.**
- Pre-Marcellus activity groundwater quality data collected by USGS for Bradford County indicates that numerous constituents found in residential drinking water wells in the area exceed drinking water criteria, including TDS, chloride, barium, lead, arsenic, iron, turbidity and manganese.
- For inorganic compounds, most results from the recent CHK-led sampling effort fall within the range of historic pre-Marcellus development and regional or well-specific pre-drill baseline data. Some parameters did exceeded screening criteria, but these could be explained by high TSS/turbidity in split sample collected, most likely caused by EPA sample collection method.
- The overwhelming majority of the organic parameters evaluated were not detected above analytical limits. In a limited number of samples low concentration of glycols, squalene, and toluene were identified. However, after further analysis these detections were either ruled to be laboratory error or not indicative of oil and gas activity. For example, the glycol was identified in blank samples, so is considered a lab contaminant rather than confirmed to be in the water sample.
- Dissolved gases were detected in a limited number of split samples, however, these detection were not significantly different than historic levels for the area or baseline levels for specific wells.